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10/593,829	01/12/2007	Nicolai Bovin	4970-2	5486

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EXAMINER	
BLAND, LAYLA D	
ART UNIT	PAPER NUMBER
1623	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/593,829	BOVIN ET AL.	
	Examiner	Art Unit	
	LAYLA BLAND	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *168-189* is/are pending in the application.

4a) Of the above claim(s) *180-186* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *168-179 and 187-189* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/12/2008, 5/13/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

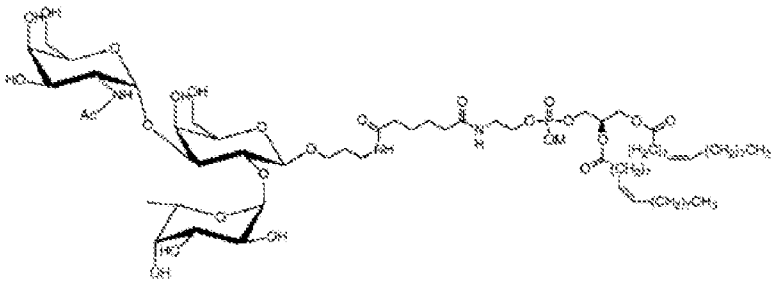
DETAILED ACTION

This office action is a response to Applicant's amendment submitted November 24, 2008, wherein claims 1-167 are canceled and claims 168-189 are newly submitted.

In view of the cancellation of claims 1-167, all rejections made with respect to those claims in the previous office action are withdrawn.

Claims 168-189 are pending.

In the response dated November 24, 2008, Applicant states that new claims 168-189 read on the elected species, which is the species of claim 153 (now cancelled). The species of previously pending claim 153 is as follows:

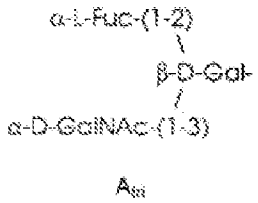


Claims 180-186 recite species which are different from than the elected species, presented above. Thus, claims 180-186 are withdrawn from consideration at this time. Claims 168-179 and 187-189 are examined on the merits herein.

Claim Objections

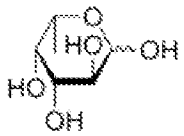
Claim 179 is objected to because of the following informalities: Claim 179 recites a different structure than was previously presented in claim 153. In the response dated November 24, 2008, Applicant states that the structure has been amended to include

the hydroxyl substituent previously omitted. It is the examiner's understanding that the previous structure was likely the correct one because A_{tri} is shown as the following in the prior art (WO 01/40796, PTO-1449 submitted May 12, 2008, see page 16):



A_{tri}

The structure of fucose (Fuc) is as follows:



Note that fucose lacks a hydroxyl group at position 6. Thus, the examiner assumes that the previous structure was correct and claim 179 will be examined as if it recited the same structure as did claim 153. It is noted that withdrawn claims 180-183 and 185-186 contain the same error.

Appropriate correction is required.

The following are new or modified rejections necessitated by Applicant's amendment submitted November 24, 2008, wherein claims 1-167 are canceled and claims 168-189 are newly submitted. New claims 168-189 differ in scope from the previously presented claims in the scope of F, S_1, S_2, and L.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 168-179 and 187-189 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 168-179 and 187-189 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the use of the particular constructs B_{tri}-sp-Ad-DOPE, A_{tri}-sp-Ad-DOPE, H_{tri}-sp-Ad-DOPE, A_{tri}-spsp_1-Ad-DOPE, and A_{tri}-sp-Ad-DSPE for incorporation into the lipid bilayer of a cell, does not reasonably provide enablement for the use of <u>any</u> construct of the formula F-S_1-S_2-L wherein F is a glycotope for the same, and does not reasonably provide enablement for effecting <u>any</u> change in the surface antigens expressed by a cell. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The factors to be considered in determining whether a disclosure meets the enablement requirements of 35 U.S.C. 112, first paragraph, have been described in *In*

re Wands, 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir., 1988). The court in Wands states, "Enablement is not precluded by the necessity for some experimentation, such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue', not 'experimentation'" (*Wands*, 8 USPQ2sd 1404). Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations" (*Wands*, 8 USPQ2d 1404). Among these factors are: (1) the nature of the invention; (2) the breadth of the claims; (3) the state of the prior art; (4) the predictability or unpredictability of the art; (5) the relative skill of those in the art; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

While all of these factors are considered, a sufficient amount for a *prima facie* case is discussed below.

(1) The nature of the invention and (2) the breadth of the claims:

The claims are drawn to a method of effecting changes in the surface antigens expressed by a cell by contacting the cell with a construct of the formula F-S_1-S_2-L, wherein F is a glycotope. (Claims 175, 176, and 179 further limit the definition of F, so the argument presented below with respect to "glycotope" is not applicable for those claims). The specification, page 33, defines "glycotope" as the antigenic determinant located on the carbohydrate portion of a glycolipid." This is functional language and

includes glycolipids and portions thereof which are not yet known in the art. The specification does not define which portions of which glycolipids are suitable, so the broadest reasonable interpretation of "glycotope" could be any carbohydrate. Furthermore, it is unclear which changes to surface antigens expressed by a cell are being effected. Thus, the claims taken together with the specification imply that any construct of the formula F-S_1-S_2-L, wherein F is any carbohydrate, can be used to effect any changes in the surface antigens expressed by a cell, including increasing or decreasing the number and types of antigens expressed by a cell or modifying the antigens in some fashion.

(3) The state of the prior art and (4) the predictability or unpredictability of the art:

As mentioned in the instant specification, insertion of GPI linked protein into membranes is known. The instant specification describes this method as one which effects changes in the surface antigens expressed by a cell.

(6) The amount of direction or guidance presented and (7) the presence or absence of working examples:

The specification states that synthetic glycolipid-based antigens can be incorporated into cell membranes, thus effecting changes in the surface antigens expressed by the cell. Thus, the invention is understood to involve insertion of the claimed constructs into a cell membrane, which would increase the number of antigens or possibly add a new antigen that was previously absent. Under this understanding of the invention, the claimed method could not decrease the number or type of antigens expressed, nor could the claimed method result in modification, without limit, of the

antigens expressed. Thus, the claims are not enabled for the generic "effecting change" with no description of which changes are effected or how the changes are effected.

The specification (page 52, Table 22) also states that, of only 9 exemplary constructs, Galβ-sp-Ad-DOPE (IX) and H_{di}-sp-Ad-DOPE (VIII) were not suitable for use in the transformation of cells because the glycotope was not recognized. These constructs contain two glycotopes of only five exemplified. These exemplary compounds are a very small sampling of the entire scope of F-S_1-S_2-L, as discussed above. Given that two of the five glycotopes in this very small sampling of the entire scope of claim 168 are not suitable for use in the transformation of cells, the skilled artisan would not expect the entire scope of claimed constructs to be effective.

(8) The quantity of experimentation necessary:

Considering the state of the art as discussed by the references above, particularly with regards to the breadth of the claims and the high unpredictability in the art as evidenced therein, and the lack of guidance provided in the specification, one of ordinary skill in the art would be burdened with undue experimentation to practice the invention commensurate in the scope of the claims.

Response to Arguments

Applicant argues that the constructs of the claimed genus can be prepared by reaction of an activated lipid and an aminoalkyl glycoside as exemplified in the specification. However, as discussed above, the full scope of which glycosides are suitable, how to determine their suitability, and how to prepare them is not taught in the

specification. Thus, undue experimentation would be required to determine the full scope of "glycotopes," then to prepare them, and then to determine is constructs comprising them would be effective. It is noted that two of five glycotopes exemplified by Applicant were shown not to be effective. Furthermore, as discussed above, the skilled artisan would not be able to practice the full scope of "effecting change" without undue experimentation and Applicant did not address the rejection with respect to "effecting change."

Claims 168-179 and 187-189 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 168 and dependent claims 169-174, 177, 178, and 187-189 are drawn to the use of a synthetic molecule construct of the structure F-S_1-S_2-L, wherein F is a glycotope. The specification states that "glycotope" is the antigenic determinant located on the carbohydrate portion of a glycolipid. The specification does not define which portions of which glycolipids are suitable. Thus, it is impossible to determine the metes and bounds of the claims with respect to the variable F.

Claim 168 and dependent claims 169-179 and 187-189 are drawn to a method of effecting change in the surface antigens expressed by a cell or multi-cellular structure. The specification does not define the changes that are effected. The specification does state that one object of the invention is to incorporate the F-S_1-S_2-L molecule into the

lipid bilayer of a cell, but that is not a definition of the vague and indefinite recitation "effecting change in the surface antigens expressed by a cell or multi-cellular structure."

Claim 188 is drawn to a method wherein "F is a ligand for a binding molecule where the presence of the binding molecule is diagnostic for a pathological condition." The specification does not provide any guidance for which compounds meet the limitation. Thus the skilled artisan would not be aware of the metes and bounds of the claim.

Claim 189 is drawn to a method wherein "F is a ligand for an antibody (immunoglobulin)." The specification does not provide any guidance for which compounds meet the limitation. Thus the skilled artisan would not be aware of the metes and bounds of the claim.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAYLA BLAND whose telephone number is (571)272-9572. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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